

to his work such intimate knowledge of Lyell himself, and such broad experience as a geological teacher. Prof. Judd's pupils in many lands will find again in this volume those stimulating memories of Lyell's life and work which they received from their own master in the Royal School of Mines. The "historical introduction" to the present edition, occupying fifty-six pages, is not only a welcome essay on the influence exerted by the doctrine of causes now in action, but also a defence (pp 49-52) of Lyell from the charge of excessive uniformitarianism. Those who have not made themselves acquainted, as Prof. Judd has done, with the extravagant speculations of geological divines and of laymen aspiring to divinity, before the days when the influence of Hutton, von Hoff, and Lyell came to be generally appreciated, can scarcely realise the sense of calm and order that was brought by these authors into a world of controversy. Charles Darwin's admiration for the "Principles of Geology" would alone assure us of Lyell's position as a thinker; and now, in turning the pages of this new issue of his admirable text-book, we are again reminded that here was a man who wrote because, and only because, the spirit moved him.

The refined woodcuts are here that we first knew in 1871. Drawings of such modernities as radiolarian ooze and thin sections of rocks have been introduced, and toothed birds and other American vertebrates are illustrated; but the view of geology remains, in the hands of so sympathetic an editor, essentially that of Lyell in his habit as he lived. We look back into the past from our experience of the present; a pleasant emphasis is laid upon the Tertiary strata throughout Europe; and the work reminds us in so many places of the history of geological thought that it still stands apart from any other text-book.

Supplementary notes have been added (pp. 601 to 610) directing attention to many recent discoveries, and these, in so limited a compass, naturally provide food for thought rather than a complete exposition. We miss a reference to the older glacial epochs; the stratigraphical breaks indicated in the diagram on p. 441 surely exaggerate enormously the imperfection of the European record; and many geologists would like to expand the modest view of contact-metamorphism stated on p. 553. It is easy to comment on details where so wide a range of subjects has been dealt with. The essential feature is that the editor has handed on to us undimmed the lantern lit by Lyell.

G. A. J. C.

MODERN KNOWLEDGE HANDBOOKS.

- (1) *Polar Exploration*. By Dr. W. S. Bruce. Pp. 256.
 - (2) *The Evolution of Plants*. By Dr. D. H. Scott, F.R.S. Pp. 256.
 - (3) *Modern Geography*. By Dr. M. I. Newbigin. Pp. 256.
- (Home University Library of Modern Knowledge.)
(London: Williams and Norgate, n.d.) Price 1s. net each.

THE three volumes the titles of which are given above belong to the Home University Library of Modern Knowledge, published by Messrs. Williams

and Norgate under the editorship of Prof. Murray, Mr. Herbert Fisher, and Prof. J. Arthur Thomson. Each is intended to be a concise handbook to the subject with which it deals, and by an acknowledged authority. The object of the series is to place within everyone's reach, at the lowest possible price, authoritative information on any branch of history, science, art, literature, philosophy, or religion with which he desires to become acquainted. Ten volumes will be issued each year. The first on our list, "Polar Exploration," by Dr. Bruce, is what the author has termed a "traveller's sample" of the Arctic and Antarctic warehouses. No one is more competent to present their contents than one who has personally sampled as he has done, more than once, both polar regions, and has besides learned much in regard to them from personal conversations and correspondence during the past twenty years with living polar explorers, including the veteran Sir Joseph Hooker, to whom the volume is dedicated. The personal note predominates, as it needs must, and those parts visited by the author are dealt with in greater detail than those which he has not had an opportunity of visiting. The aspects of the subject dealt with in the present volume are the astronomical features of the polar regions; the ice, both land and sea, its coloration and that of snow; the vegetation, the animal life and the physics of these regions; their meteorology, magnetism, aurora, and tides, with a final chapter on the aims and objects of modern polar exploration. Not the least important addition to the physics of the southern seas made by the Scottish national Antarctic expedition was the discovery of the existence of a long "rise" extending in a curve from Madagascar *via* Bouvet Island, the Sandwich group, the South Orkneys, Graham Land, and the Falklands to South America. "Thus Antarctica, South America, and Madagascar and probably South Africa become connected with one another in a most direct manner by this rise." The volume smacks of a Stevensonian voyage.

(2) "The Evolution of Plants" is a masterly *résumé* of this extremely difficult subject by one of our highest authorities, himself a leading investigator in palæobotany. Dr. Scott's object in this book is to try to trace historically the course which the evolution of plants has actually followed, confining himself to those groups for which the evidence is most satisfactory. The questions here considered are: the evolution of true-flowering plants; that of the seed-plants generally; and, thirdly, that of the great groups of the higher cryptogams, or spore-plants, the ferns, the club mosses, the horsetails and sphenophylls. Dr. Scott's work "needs no bush."

(3) Dr. Marion Newbigin dates the commencement of "modern geography" only from 1859, the year when the celebrated geographers Humboldt and Ritter died and Darwin's "Origin" appeared. The doctrine of evolution has had an enormous effect on geographical science, and its development has been so great that to give a complete survey of the subject would be impossible. Her volume, "Modern Geography," therefore, suggests only some of the

lines along which research is proceeding most actively at the present time, special stress being laid upon those aspects of the subject which are not as yet fully treated in the smaller text-books.

The first four chapters deal with a general survey of the earth's surface, its mountains and ocean depths, the formation of its hills and valleys due to atmospheric agents, running water and ice, and the effects of climate on the distribution of other phenomena on the surface of the globe. In the successive chapters the author describes the three chief zones of vegetation, the Mediterranean scrub land, the temperate forest zone, and the steppe or pasture land, and that as each of these is determined by climate, each again has special types of cultivated plants and domesticated animals.

"It is interesting to note," adds the author, "what cannot be a pure coincidence [and yet may it not be so?], that in Europe three races of men exist, which show a certain rough correspondence to the three zones of vegetation. The Mediterranean type of vegetation and climate is associated" with the Mediterranean race. . . . "The characteristic inhabitants of the temperate forest region of Europe are members of the race called Teutonic or Nordic . . . the steppe and pasture lands . . . tend to be occupied by a third race . . . to which the . . . name of Alpine has been given."

The penultimate chapter is devoted to the races of Europe and their origin, and the last to the distribution of minerals and the localisation of industries and of towns. "Modern Geography" is a suggestive book.

Although the space at our disposal precludes a detailed notice of these volumes, we can warmly and conscientiously recommend them to those interested in the subjects with which they deal. All three are provided with full indexes, and "The Evolution of Plants" has besides an excellent bibliography of the most important works on palæobotany.

OUR BOOK SHELF.

Medical Science of To-day: a Popular Account of the More Recent Developments in Medicine and Surgery. By Dr. Willmott Evans. Pp. 324. (London: Seeley, Service, and Co., Ltd., 1912.) Price 5s. net.

THIS is a very delightful book. None of the natural sciences has greater wonders to tell than medical science; none touches more nearly our admiration of good work slowly brought to success. Dr. Willmott Evans is an excellent interpreter; he understands the art of freeing the wonder of the discovery itself from the wrappings of long words put round it by the doctors; he makes the reader feel the intense human significance of the many facts on which the present fabric of medicine and surgery is founded and built; and his book ought to be very widely read and remembered.

Of course, with such an "imperial theme," it was not possible for him to say all that ought to be said. The embarrassment of riches left him only a paragraph or two for methods each deserving a chapter. But he ought to have found room to say more about the tremendous influence of the experimental method in medical science. For instance, his mention of brain-surgery does not do justice to the experimental study of cerebral localisation; and the same fault occurs in his chapter on organo-therapy. And, of course, there are omissions of less importance; thus

he speaks of yellow fever without naming Walter Reed, and he describes myxedema without giving photographs of cases before and after thyroid treatment. He might with advantage have left out the chapters or subchapters on patent medicines, idiosyncrasies, and malingering; the chapters on legal medicine also want thinning.

The one grave defect in the book is the overshadowing of methods by results; he shows us the thing made, not the thing in the making. Still, he has written a book which is excellent reading; he plainly has enjoyed writing it, and it gives a faithful and valuable account of the modern science and art of medicine, surgery, and preventive medicine.

Climatic Control. By L. C. W. Bonacina. Pp. viii+167. (London: A. and C. Black, 1911.) Price 2s.

WORKS on climatology and articles in meteorological text-books treating of that subject abound in various forms, but that there is still room for others dealing with different aspects of this important question is shown by the interesting and useful little volume now under review. It is published as one of the series of "Black's School Geography," and, being intended primarily for British students, prominence is given to the climate of this country, but that of other "well-known lands," selected as representative of the various zones and regions, is considered at some length.

In an instructive chapter on the general principles of climatology, the factors which produce variations in different parts of the world—e.g. latitude, altitude, prevailing winds, &c.—are separately discussed, and this is followed by chapters (1) on the types of land and the effect of the prime elements of light, heat and moisture, the distribution of vegetation being taken as a rough criterion of the climatic variations; and (2) the influence of climate upon man. The whole of these various aspects are treated in a manner that cannot fail to attract the attention of students, and to induce them to pursue the subject further. The last chapter deals with meteorology and is intended for more advanced students. This chapter, like those preceding it, exhibits an intimate knowledge of the subject, and we regret that it was found necessary, for lack of space, to omit questions relating to atmospheric electricity—e.g. thunderstorms, &c.—and to optical phenomena.

The effect of the rotation of the earth on the circulation of the air and on the behaviour of cyclones and anticyclones and many other questions sometimes presenting difficulty to students are clearly explained. A few well-chosen synoptic charts, recently published by the Meteorological Office, are added to explain some of the principal types of weather.

An Introduction to Chemical Theory. By Dr. A. Scott, F.R.S. Second edition. Pp. viii+272. (London: A. and C. Black, 1911.) Price 5s. net.

THE first edition of this book was published twenty years ago, just as the "new" physical chemistry was flowing into this country and gaining admission to lecture courses and text-books. It was in a way the last of its race, and it still retains in the new edition a marked mid-Victorian flavour. This is not said in disparagement; indeed, the restraint shown by the author on the more speculative side of theoretical chemistry is a reminder of what in some respects were better days.

The distinction between chemical philosophy, general chemistry, and physical chemistry has become very vague, but Dr. Scott's book may be described as dealing rather with chemical philosophy than physical chemistry, and in that character it has some distinctive features which may give it a place in the